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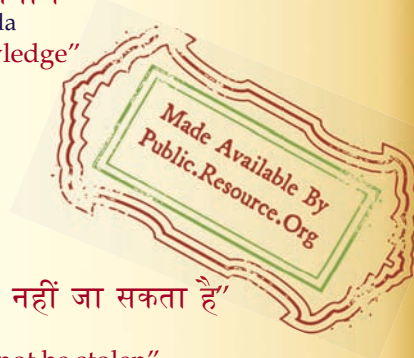
IS 713 (1981): Zinc base alloy ingots for die casting [MTD
9: Lead, Zinc, Cadmium, Tin, Antimony and their Alloys]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

SPECIFICATION FOR
ZINC BASE ALLOY INGOTS FOR DIE CASTING
(*Second Revision*)

Third Reprint AUGUST 1998

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

AMENDMENT NO. 1 APRIL 2011
TO
IS 713 : 1981 SPECIFICATION FOR ZINC BASE ALLOY
INGOTS FOR DIE CASTING

(Second Revision)

(Page 5, Table 1) – Substitute the following for the existing:

Table 1 Chemical Composition of Zinc Base Alloys
(Clauses 1.1 and 4.1)

| Constituent | Zn Al 4 Percent | Zn Al 4 Cu 1 Percent |
|------------------------------------|--------------------|-------------------------|
| (1) | (2) | (3) |
| Aluminium | 3.8 to 4.2 | 3.8 to 4.2 |
| Copper | — | 0.7 to 1.1 |
| Magnesium | 0.035 to 0.06 | 0.035 to 0.06 |
| Impurities: | | |
| Copper, <i>Max</i> | 0.03 | — |
| Iron, <i>Max</i> | 0.02 | 0.02 |
| Lead, <i>Max</i> | 0.003 | 0.003 |
| Cadmium, <i>Max</i> | 0.003 | 0.003 |
| Tin, <i>Max</i> | 0.001 | 0.001 |
| Nickel, <i>Max</i> | 0.001 | 0.001 |
| Thallium and Indium, <i>Max</i> | 0.001 5 | 0.001 5 |
| Zinc | Remainder | Remainder |

NOTE — In case of Indium and Thallium, the supplier shall undertake that the material does not contain impurities in limits of as referred to above.

Indian Standard

SPECIFICATION FOR ZINC BASE ALLOY INGOTS FOR DIE CASTING (*Second Revision*)

Lead, Zinc, Tin, Antimony and Their Alloys Sectional Committee,
SMDC 12

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Indian Standard

SPECIFICATION FOR ZINC BASE ALLOY INGOTS FOR DIE CASTING (*Second Revision*)

0. F O R E W O R D

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 12 February 1981, after the draft finalized by the Lead, Zinc, Tin, Antimony and Their Alloys Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard was first published in 1955 and subsequently revised in 1966. In this revision, maximum limit for iron in the alloys has been reduced in line with ISO/R 301 'Zinc alloy ingots'. The alloy designation adopted in the standard is same as used in ISO/R 301, and replaces the former nomenclature of Alloy 1 and Alloy 2. The alloys Zn Al 4 and Zn Al 4 Cu 1 are almost identical in composition with Alloys 1 and 2, respectively.

0.3 This standard is based on the manufacturing and trade practices followed in the country in this field. Assistance has also been derived from the following:

ISO/R 301-1963 Zinc alloy ingots. International Organization for Standardization.

BS 1004: 1972 Zinc alloys for die casting and zinc alloy die castings. British Standards Institution.

ASTM B 240-1964 (Reapproved 1971) Zinc alloys in ingot form for die castings. American Society for Testing and Materials.

AS 1881-1977 Zinc alloy ingots (for pressure die casting) and zinc alloy pressure die castings. Standards Association of Australia.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained

*Rules for rounding off numerical values (revised).

in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for two grades of zinc base alloy ingots for die casting, namely, Zn Al 4 and Zn Al 4 Cu 1 (see Table 1).

2. SUPPLY OF MATERIAL

2.1 General requirements relating to the supply of zinc base alloy ingots for die casting shall conform to IS : 1387-1967*.

3. MANUFACTURE

3.1 The alloys shall be manufactured from the virgin metals. Grade Zn 99.99 of IS : 209-1979† shall be used for the manufacture of these alloys. No zinc scrap and secondary zinc alloy shall be used.

4. CHEMICAL COMPOSITION

4.1 The material, when tested in accordance with the methods given in IS : 2600-1964‡, shall have the chemical composition given in Table 1.

4.1.1 Spectrographic methods of analysis as specified in IS : 2599-1963§ may be adopted as an alternative.

5. FREEDOM FROM DEFECTS

5.1 Ingots shall be reasonably free from dross, slag and other foreign inclusions and shall have a clean surface.

6. CHARACTERISTIC OF INGOTS

6.1 Unless specified otherwise, ingots shall normally weigh 5 to 20 kg each.

6.2 Ingots shall have a shape which permits stacking.

*General requirements for the supply of metallurgical materials (first revision).

†Specification for zinc (third revision).

‡Methods of chemical analysis of high purity zinc and zinc base alloys for die casting.

§Methods of spectrographic analysis of high purity zinc and zinc base alloys for die casting.

TABLE 1 CHEMICAL COMPOSITION OF ZINC BASE ALLOYS

(Clauses 1.1 and 4.1)

| CONSTITUENT | Zn Al 4 PERCENT | Zn Al 4 Cu 1 PERCENT |
|---------------------------------|--------------------|-------------------------|
| (1) | (2) | (3) |
| Aluminium | 3.9 to 4.3 | 3.9 to 4.3 |
| Copper | — | 0.75 to 1.25 |
| Magnesium | 0.04 to 0.06 | 0.04 to 0.06 |
| Impurities: | | |
| Copper, <i>Max</i> | 0.03 | — |
| Iron, <i>Max</i> | 0.03 | 0.03 |
| Lead, <i>Max</i> | 0.003 | 0.003 |
| Cadmium, <i>Max</i> | 0.003 | 0.003 |
| Tin, <i>Max</i> | 0.001 | 0.001 |
| Thallium and Indium, <i>Max</i> | 0.001 5 | 0.001 5 |
| Zinc | Remainder | Remainder |

NOTE 1 — In case of Indium and Thallium, the supplier shall undertake that the material does not contain impurities in limits excess of as referred to above.

NOTE 2 — When ingots are required for rerolling, the limit for Indium and Thallium shall be subject to the agreement between the supplier and the purchaser.

6.3 As agreed to between the purchaser and the manufacturer, ingots may include notches which would allow them to be broken up into small pieces. Some of these ingots may include cast-on feet with a view to facilitating handling of stacks of ingots.

7. SAMPLING

7.1 Unless otherwise agreed to between the purchaser and the manufacturer, two ingots (one in beginning and other at end of melt) shall be selected from each lot of 1 000 kg or part thereof representing one grade of alloy produced in the same melt and offered for inspection at the same time.

7.2 The method of preparing samples for chemical and spectrographic analysis from ingots selected under **7.1** shall be in accordance with IS: 1817-1961* and IS : 8816-1979† respectively.

*Methods of sampling non-ferrous metals for chemical analysis.

†Methods for selection and preparation of samples for spectrographic analysis of zinc and zinc alloys.

8. RE-TEST

8.1 If the sample prepared under **7.1** fails to meet the requirements specified under **4.1**, two more tests shall be conducted on the same sample in order to confirm that the analysis has been done properly. If both the test results satisfy the relevant requirements, the lot shall be accepted. Should either of the re-tests fail, the lot represented shall be deemed as not complying with this standard.

9. CERTIFICATE OF COMPLIANCE

9.1 The alloy producer shall supply a certificate of compliance with the composition limits, for each consignment of ingots of at least 1 000 kg. The certificate shall state the melt number of each melt or part thereof contained in the consignment.

10. MARKING

10.1 Each ingot shall be legibly marked with:

- a) cast number,
- b) grade of the material, and
- c) manufacturer's initials or trade-mark.

10.1.1 The product may also be marked with Standard Mark.

10.2 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

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